

# AN APPARATUS FOR ECONOMICALLY ISOLATING A USB PERIPHERAL FROM A USB HOST

## ABSTRACT OF THE INVENTION

5           A peripheral device having bus isolation from a host computer is disclosed. The peripheral device has a microcontroller which receives a plurality of input output (I/O) signals from a plurality of logic devices in the peripheral devices. The microcontroller translates the plurality of I/O signals to signals comprehensible by I/O bus and transmits the translated signal over a serial bus. The peripheral device further includes a first unidirectional to bi-directional converter which receives I/O signals from the microcontroller and directs the signal in accordance with a directional signal from the microcontroller. The optical isolation barrier comprises of a number of optical isolating devices, which isolates the peripheral from the host and other peripherals. The peripheral device further includes a second unidirectional to bi-directional converter which has a separate ground potential then the first unidirectional to bi-directional converter. The separation of ground potentials between the two converters and isolation of the peripheral device from the host computer with fewer optical isolation  
10  
15  
20           circuits substantially reduces noise, ground loop and possible electrical hazards along with substantial reduction in cost.